CUBOID-NAVICULAR TARSAL COALITION

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ABSTRACT

The authors present the case of a nine-year-old female patient who presented with pain in her right foot associated with physical activities. After this case was diagnosed as cuboid-navicular tarsal coalition, the patient was treated surgically with resection of the coalition, thereby resolving the symptoms. The literature was reviewed and the importance of adequate physical examination and imaging assessment for investigating foot pain in children and adolescents was discussed.

Keywords – Foot Deformities, congenital/surgery; Tarsal Bones/surgery; Subtalar Joint

INTRODUCTION

Tarsal coalition is a congenital abnormality in which varying degrees of fusion occur between two or more tarsal bones. It affects around 2% of the population and is often asymptomatic[1]. Holl, in 1880, was the first to ascribe clinical importance to this pathological condition, in a description on the relationship between intertarsal bars and rigid and painful flat feet[2]. It may possibly be presented as a cavovarus foot that is rigid due to spasms of the anterior tibial muscle[3]. These coalitions may be body, cartilaginous or fibrous. The commonest locations for the bone bridges are between the talus and the calcaneus (medial talocalcaneal) and between the navicular and the calcaneus, which together account for over 90% of the cases (respectively, 48% and 44% of the cases of tarsal coalition. Bars between the talus and the navicular and between the calcaneus and cuboid account for an additional 1% each. Johnson *et al*[4] reported a case of a cuboid-navicular bar that was treated surgically by means of resection. A bar between the cuboid and the navicular is rare, with few cases described in the literature[5-10].

CASE REPORT

The patient was a nine-year-old girl with a complaint of discomfort in her right foot for one year that was related to physical exercise practices. It had already been treated as tendinitis and sprained ankle, but without any improvement in the condition. The treatment included restrictions on her habitual activities, periods of immobilization, physiotherapy, use of shoe inserts and use of non-hormonal anti-inflammatory medications.

Clinically, she presented normal gait and plantigrade feet, with diminished active varization of the hindfoot when she was on tiptoes. There was a limitation on mobility of the midtarsal joint, but with preserved mobility of the ankle and subtalar joint.

The patient was sent for computed tomography, which showed the presence of a bone bar between the cuboid and the navicular (Figures 1, 2, 3 and 4).

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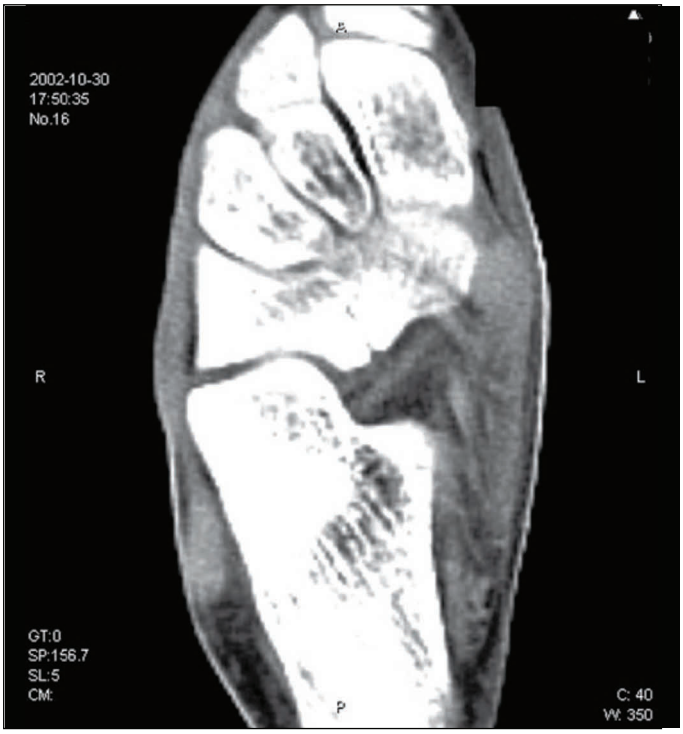

Figure 1 – Tomographic section showing cuboid-navicular coalition.

Figure 3 – Tomographic reconstruction showing cuboid-navicular coalition.

Figure 2 – Tomographic reconstruction showing cuboid-navicular coalition.

Figure 4 – Three-dimensional tomographic reconstruction showing cuboid-navicular coalition.

For this patient, we chose surgical treatment because there had been a continuous complaint for at least one year, without improvement through the conservative treatment that had been instituted, and there was already a limitation on the mobility of the midtarsal joint.

An oblique incision was made in the lateral face of the foot (Ollier route), with deinsertion of the origin of the short extensor muscle of the toes, which was moved away distally. This made it possible to view the distal portion of the calcaneus, head of the talus, cuboid and navicular. The bar was resected between the cuboid and the navicular, with subsequent interposition of the short extensor muscle of the toes, like in the Cowell technique for resecting a calcaneal-navicular bar[11,12].

During the postoperative period, the patient was kept without bearing weight on her foot. She walked with the aid of crutches for three weeks, with passive and active manipulation of the subtalar joint and midtarsal joint starting on the second postoperative day. Following this, she was released for bearing weight on her foot unaided,

and the physiotherapy was intensified, with the aims of muscle strength restoration, proprioception and gait training. After eight weeks of this procedure, the patient was ready to return to her previous activities. After the third postoperative month, she was free from symptoms, independent of the activity undertaken.

Five years after the operation, the patient continues to have no complaints, with normal physical examinations and no limitations on physical activities.

DISCUSSION

According to Tachdjian, many patients with tarsal coalition do not have significant symptoms and, for this reason, do not require treatment. In the presence of acute symptoms after trauma, conservative treatment may be indicated, with rest, analgesia and observation of the evolution. Conservative treatment for coalitions includes heel elevation, use of orthoses and even plaster-cast immobilization[5,13]. Surgical treatment is indicated when pain control through conservative treatment fails. Resection of the bar is indicated for young patients without radiographic evidence of degenerative abnormalities or associations with other coalitions. Most authors agree that resection of the coalition provides good results[14]. The dorsolateral access route used for our patient enabled adequate viewing of the bar and adequate resection, thereby avoiding the complications relating to plantar incisions[4,15]. For patients with joint degeneration, multiple coalitions and resection failure, indications for arthrodesis should be considered[16].

The importance of the case presented here lies in the fact that there are causes of valgus flat foot during childhood that require specific treatment. Among patients with symptomatic valgus flat foot, physicians should suspect and investigate the presence of association conditions. When joint rigidity in the hindfoot or midfoot is observed, coalitions are the main cause[16]. Cuboid-navicular bar is of interest because of its rarity. It is usually associated with symptoms, but it should be included in the list of possible diagnoses under these circumstances.

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